

# DDA8010元件動態參數分析儀(Device Dynamics Analyzer)

- ◆ Worldwide first platform to measure dynamic R<sub>dson</sub>, dynamic V<sub>th</sub>, dynamic V<sub>sd</sub> and dynamic reliability of GaN devices beyond JEDEC
- ◆ Up to 800V stress, 500kHz switching frequency, and 10A current
- ◆ Provide hard switching(HSW) and soft switching(ZVS)
- ◆ Available with on-wafer solution([WPDDA6505](#))
- ◆ Built-in inline functions including pulse IV
- ◆ Available for both power and RF GaN devices.

Model		DDA8010
Functionality	Thermal Control	25°C~175°C
	Gate Driver Spec	±20V,ΔV = 20V
Static condition	Pulse Frequency	250Hz ~ 10000Hz
	Pulse Width	1μs ~ 50μs
Pulse IV	Drain Current/Voltage	30A (0 ~ 10V), 10A (10V ~ 20V)
	Voltage Increment	0.05V
Dynamic Vsd	Frequency	100kHz ~ 300kHz
	Duty	10% to 90% with 10% increment
	Stressing Voltage	800V max
	Drain Voltage/Current	25V/10A max
Dynamic R <sub>dson</sub> /HTOL	Frequency	100kHz ~ 500kHz
	Duty	10% to 90% with 10% increment
	Drain Voltage	800V max
	Drain Current	10A max
Dynamic V <sub>th</sub>	Frequency	100kHz ~ 300kHz
	Duty	10% to 90% with 10% increment
	Stressing Voltage	800V max
	Drain Voltage/Current	2V/10A max
Baking	Real time monitor drain current and threshold voltage alternatively	



Device Dynamics Analyzer : DDA8010



Wafer Probing Device Dynamics Analyzer

[WPDDA6505](#)

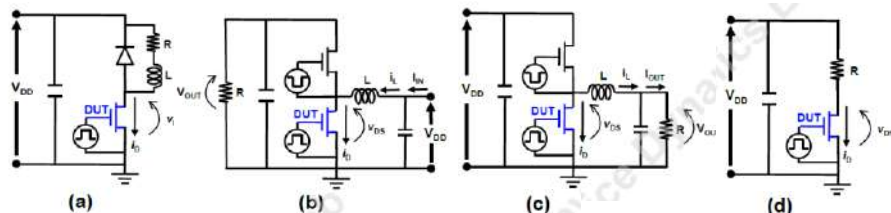
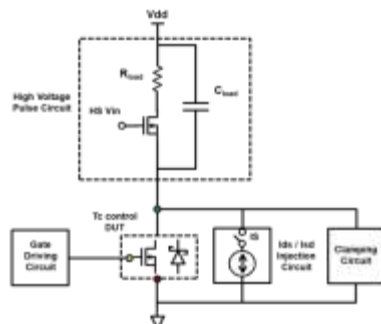
# Methodology Beyond JEDEC

## JEDEC STANDARD (JEP182) :

Test Method for Continuous-Switching Evaluation of Gallium Nitride Power Conversion Devices

### Novel Topology :

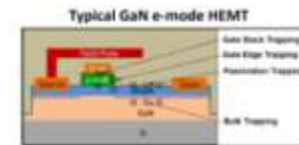
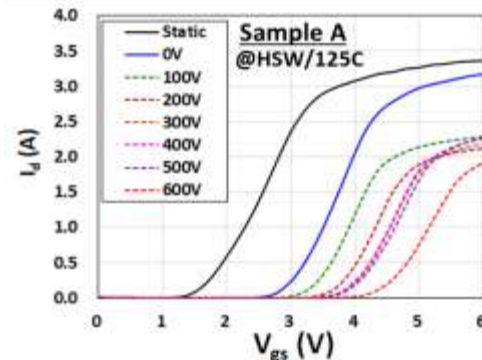
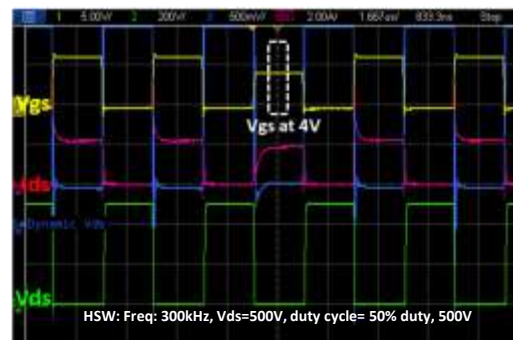
- ✓ System like characterization : Dynamic Ron/Vth/Vsd
- ✓ Provide hard switching(HSW) and soft switching(ZVS)
- ✓ High flexibility of temperature, high voltage, current, frequency and duty.
- ✓ Low system power requirement. (1 Channel 110V 20A for DDA8010)



### Dynamic Characteristics : Dynamic Vth

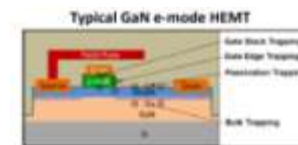
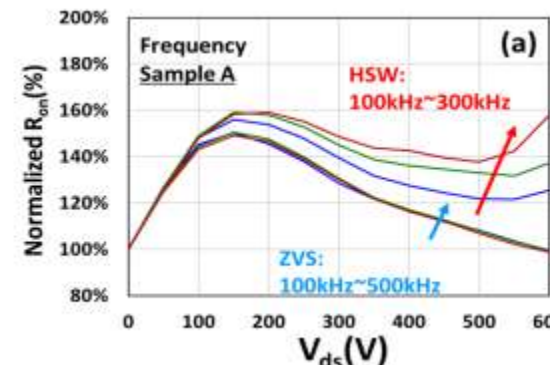
- ◆ Trapping induced Vth shift during switching
- ◆ Hard switching worse than Soft switching (ZVS)
- ◆ Voltage & Temperature dependent
- ◆ Impact to switching current capability

Partial Vgs pulse level sweep to characterize Vth



### Dynamic Characteristics : Dynamic Rdson

- ◆ Trapping induced Rdson increasing during switching
- ◆ Hard switching worse than Soft switching (ZVS)
- ◆ Switching Voltage dependent



Method	DDL	JEDEC				
	DDA8010	(a)	(b)	(c)	(d)	
Topology	Novel	RL load	Boost	Buck	R load	
System-like Operation	HSW / ZVS	HSW	HSW / ZVS	ZVS	HSW	
Dynamic Characterization	Dynamic Ron / Vth / Vsd	Dynamic Ron	Dynamic Ron	Dynamic Ron	Dynamic Ron	
Acceleration Flexibility	Temp.	V	V	V	V	
	Voltage	V	V	V	V	
	Current	V	V	V	V	
	Freq.	V	limited	limited	limited	limited
	Duty	V	limited	limited	limited	limited